

LISTING OF THE CLAIMS

The following listing of claims replaces all previous versions and listings of claims in the present application.

1. (previously presented) An elevationally focused ultrasonic probe comprising an array of MUT cells and a curved member coupled to the array of MUT cells.

2. (previously presented) The probe as recited in claim 1, wherein the curved member comprises a curved lens adhered to said array of MUT cells, and a planar substrate, said MUT cells being built on said substrate.

3. (original) The probe as recited in claim 2, further comprising a layer of adhesive material between said lens and said array.

4. (original) The probe as recited in claim 3, further comprising a barrier layer disposed between said layer of adhesive material and said array of MUT cells, said barrier layer being made of a material that prevents chemical diffusion from said lens to said MUT cells.

5. (previously presented) The probe as recited in claim 1, wherein the curved member comprises a curved substrate, said MUT cells being built on said substrate, and a layer of protective material covering said array of MUT cells.

6. (original) The probe as recited in claim 1, wherein said array comprises a first multiplicity of MUT cells hard-wired together and a second multiplicity of MUT cells hard-wired together.

7. (previously presented) The probe as recited in claim 6, wherein said MUT cells of said first multiplicity are arranged side by side and cover a generally rectangular area, the length of

said rectangle being aligned with an elevation direction, said lens being curved in said elevation direction.

8. (previously presented) The probe as recited in claim 2, wherein said lens is cylindrical, multifocal or elliptical.

9. (original) The probe as recited in claim 2, further comprising adhesion promoting material applied on a front face of said array or on a rear face of said lens or both.

10. (original) The probe as recited in claim 5, further comprising adhesion promoting material applied on a front face of said array or on a surface of said protective layer that faces said array.

11. (original) The probe as recited in claim 2, wherein said lens is made of a polymeric material.

12. (original) The probe as recited in claim 11, wherein said lens is made of silicone rubber and said adhesive material is made of room-temperature vulcanizing silicone rubber.

13. (original) The probe as recited in claim 9, wherein said adhesion-promoting material is a silicate.

14. (original) The probe as recited in claim 9, wherein said adhesion-promoting material is an organometallic.

15. (original) The probe as recited in claim 9, wherein said adhesion-promoting material is a reactive organosilane.

16. (original) The probe as recited in claim 1, wherein each of said MUT cells is a capacitive MUT cell.

17. (original) The probe as recited in claim 1, wherein each of said MUT cells is a piezoelectric MUT cell.

18. (original) The probe as recited in claim 1, further comprising:
a layer of CMOS electronics below said array of MUT cells; and
a silicon substrate below said layer of CMOS electronics.

19. (previously presented) An ultrasonic probe comprising:
a curved substrate having a profile that is substantially constant in an azimuthal direction;
an array of MUT cells built on said curved substrate and facing toward a line of focus,
said MUT cells being disposed on a concave side of said curved substrate; and
a layer or protective material applied on the face of said array of MUT cells, said layer having a substantially constant thickness or having a flat top surface and a bottom surface that follows the curvature of the substrate, if the speed of sound in the protective material is generally equal to the speed of sound in water or tissue.

20. (original) The probe as recited in claim 19, wherein each of said MUT cells is a capacitive MUT cell.

21. (original) The probe as recited in claim 19, wherein each of said MUT cells is a piezoelectric MUT cell.

Claims 22-38 (cancelled)

39. (previously presented) An integrated device comprising:

a curved lens;
a first multiplicity of MUT cells hard-wired together and disposed underneath said lens;
a second multiplicity of MUT cells hard-wired together and disposed underneath said lens;
CMOS electronics disposed underneath said first and second multiplicities of MUT cells;
and
a silicon substrate disposed underneath said CMOS electronics.

40. (original) The device as recited in claim 39, wherein each of said MUT cells is a capacitive MUT cell.

41. (original) The device as recited in claim 39, wherein each of said MUT cells is a piezoelectric MUT cell.

42. (previously presented) The probe as recited in claim 1, wherein the curved member comprises a lens coupled to the array of MUT cells in at least close proximity or direct contact with membranes of the MUT cells.

43. (previously presented) The probe as recited in claim 19, wherein the layer of protective material is disposed directly onto front faces of the MUT cells in the array.

44. (previously presented) The device as recited in claim 39, wherein the curved lens is coupled to the first and second multiplicities of MUT cells in at least close proximity or direct adhesion with membranes of the MUT cells.

45. (previously presented) An ultrasonic probe, comprising:
a plurality of micromachined ultrasonic transducer cells;

a curved lens coupled in at least close proximity or directly to membranes of the plurality of micromachined ultrasonic transducer cells.

46. (previously presented) The ultrasonic probe as recited in claim 45, comprising one or more generally thin layers of adhesive and protective materials disposed between the curved lens and the membranes of the plurality of micromachined ultrasonic transducer cells.